

§ 222.3

in lieu of other lands suitable for similar purposes at another location.

(h) *Procedural guidance.* Procedures regarding the application of the principles outlined in the above paragraphs are as follows:

(1) For various flood magnitudes up to the probable maximum flood determine the “with” and “without project” flood conditions downstream of a dam spillway for the following:

- (i) Flooded area.
- (ii) Flood depth.
- (iii) Flood duration.
- (iv) Velocities.
- (v) Debris and erosion.

(2) Determine the combinations of flood magnitudes and the above flood conditions that could be the most hazardous and/or result in the greatest increase in hazard from “without” to “with project” flood conditions. Designate these combinations of flood magnitude and flood conditions as the critical conditions.

(3) For the critical conditions selected above outline the areas where the project could increase and/or create (impose) one or more of the critical conditions. Areas where spillway flows do not create or increase flood conditions are excluded from further analysis.

(4) Determine where the imposed critical conditions as outlined above would be hazardous and non-hazardous. Non-hazardous areas are defined as those areas where:

- (i) Flood depths are maximum of 2 feet in urban and rural areas.
- (ii) Flood depths are essentially non-damaging to urban property.
- (iii) Flood durations are a maximum of 3 hours in urban areas and 24 hours in agricultural areas.
- (iv) Velocities do not exceed 4 feet per second.
- (v) Debris and erosion potentials are minimal.
- (vi) Imposed flood conditions would be infrequent. That is, the exceedence frequency should be less than 1 percent. Hazardous areas are those where any of the above criteria are exceeded.

(5) Based upon the information developed above and the principles outlined in paragraphs (c) through (f) of this section, decide on the extent of area

33 CFR Ch. II (7–1–15 Edition)

and estate required for hydrologic safety purposes.

(i) *Reporting.* Lands to be acquired downstream from spillways and intended purposes will be identified and the cost included in feasibility reports and real estate design memoranda. Additional specific information in support of land acquisition should be provided in Phase I or Phase II general design memoranda (GDM) and dam modernization reports. This information should include topographic maps, area flooded maps, velocities, erosion and debris areas “with” and “without” the project. Real estate boundaries and discussions of items in paragraph (h)(4) are also essential in the GDM’s and dam modernization reports.

[43 FR 35481, Aug. 10, 1978. Redesignated at 60 FR 19851, Apr. 21, 1995]

§ 222.3 Clearances for power and communication lines over reservoirs.

(a) *Purpose.* This regulation prescribes the minimum vertical clearances to be provided when relocating existing or constructing new power and communication lines over waters of reservoir projects.

(b) *Applicability.* This regulation applies to all field operating agencies having Civil Works responsibilities.

(c) *References.* (1) ER 1180–1–1 (Section 73).

(2) National Electrical Safety Code (ANSI C2), available from IEEE Service Center, 445 Hoes Lane, Piscataway, N.J. 08854.

(d) *Definitions*—(1) *Design high water level.* The design high water level above which clearances are to be provided shall be either: (i) The elevation of the envelope profile of the 50 year flood, or flood series, routed through the reservoir with a full conservation pool after 50 years of sedimentation, or (ii) the elevation of the top of the flood control pool, whichever is higher.

(2) *Low point of line.* The low point of the line shall be the elevation of the lowest point of the line taking into consideration all factors including temperature, loading and length of spans as outlined in the National Electrical Safety Code.

(3) *Minimum vertical clearance.* The minimum vertical clearance shall be the distance from the design high

water lever (paragraph (d)(1) of this section) to the low point of the line (paragraph (d)(2) of this section).

(e) *Required clearances.* Minimum vertical clearances for power and communication lines over reservoirs shall not be less than required by section 23, rule 232 of the latest revision of the National Electrical Safety Code (ANSI C2).

(1) In general, minimum vertical clearances shall not be less than shown in Table 232-1, Item 7, of ANSI C2, even for reservoirs or areas not suitable for sailboating or where sailboating is prohibited.

(2) If clearances not in accordance with Table 232-1 of ANSI C2 are proposed, justification for the clearances should be provided.

(f) *Navigable waters.* For parts of reservoirs that are designated as navigable waters of the United States, greater clearances will be provided if so required. The clearances required over navigable waters are covered by 33 CFR 322.5(i)(2) and are not affected by this regulation.

[43 FR 14013, Apr. 4, 1978. Redesignated at 60 FR 19851, Apr. 21, 1995]

§ 222.4 Reporting earthquake effects.

(a) *Purpose.* This regulation states policy, defines objectives, assigns functions, and establishes procedures for assuring the structural integrity and operational adequacy of major Civil Works structures following the occurrence of significant earthquakes. It primarily concerns damage surveys following the occurrences of earthquakes.

(b) *Applicability.* This regulation is applicable to all field operating agencies having Civil Works responsibilities.

(c) *References.* (1) ER 1110-2-100 (§ 222.2).

(2) ER 1110-2-1806.

(3) ER 1110-2-8150.

(4) ER 1130-2-419.

(5) State-of-the-Art for Assessing Earthquake Hazards in the United States—WES Miscellaneous Papers S-73-1—Reports 1 thru 14. Available from U.S. Army Engineer Waterways Experiment Station, P.O. Box 631, Vicksburg, Mississippi 39180.

(d) *Policy.* Civil Works structures which could be caused to fail or par-

tially fail by an earthquake and whose failure or partial failure would endanger the lives of the public and/or cause substantial property damage, will be evaluated following potentially damaging earthquakes to insure their continued structural stability, safety and operational adequacy. These structures include dams, navigation locks, powerhouses, and appurtenant structures, (intakes, outlet works, buildings, tunnels, paved spillways) which are operated by the Corps of Engineers and for which the Corps is fully responsible. Also included are major levees, floodwalls, and similar facilities designed and constructed by the Corps of Engineers and for whose structural safety and stability the Corps has a public obligation to be aware of although not responsible for their maintenance and operation. The evaluation of these structures will be based upon post-earthquake inspections which will be conducted to detect conditions of significant structural distress and to provide a basis for timely initiation of restorative and remedial measures.

(e) *Post-earthquake inspections and evaluation surveys*—(1) *Limitations of present knowledge.* The design of structures for earthquake loading is limited by the infrequent opportunity to compare actual performance with the design. Damage which would affect the function of the project is unlikely if peak accelerations are below 0.1g.; but it cannot be assumed that a structure will not be damaged from earthquake loadings below that for which it was designed. Furthermore, earthquakes have occurred in several parts of the country where significant seismic activity had not been predicted by some seismic zoning maps. This indicates the possibility that earthquake induced loads may not have been adequately considered in the design of older structures.

(2) *Types of reportable damage.* Many types of structural damage can be induced by ground motion from earthquakes or from large nuclear blasts (which also tend to induce ground vibrations in the more damaging lower frequency ranges). Any post-earthquake change in appearance or functional capability of a major Civil Works structure should be evaluated